

LELICHOV, A.D., Cand Vet Sci—(diss) "Experimental studies on ~~the~~ accelerated ~~development~~ <sup>detection</sup> of Anthrax bacillus in water." Mos, 1952. 16 p  
(Mos Vet Acad of the Min of Agr USSR. Chair of Microbiology), 140 copies  
(K1, 26-58, 114)

-120-

KOLYAKOV, Ya.Ye., zasluzhennyy deyatel' nauk RSFSR, prof.; MELIKHOV, A.D.,  
kand.veter. nauk

Rapid diagnosis of the anthrax microbe in water. Veterinariia 37  
no.3:81-84 Mr '60. (MIRA 16:6)

1. Moskovskaya veterinarnaya akademiya.  
(Anthrax)

MELIKHOV, A. D., (Candidate of Veterinary Sciences, All-Union of  
Experimental Veterinary Medicine)

The role of trichomonads in infectious atrophic rhinitis in swine.

Veterinariya vol. 38, no. 9, September 1961, pp. 36.

MELIKHOV, A.D., kand. veterinarnykh nauk

Role of trichomonads in infectious atrophic rhinitis of  
swine. Veterinariia 38 no.9:36-37 S '61. (MIRA 1:8)

1. Vsesoyuznyy institut eksperimental'noy veterinarii.

MEIKHOV, A.N. (Paganrog)

Some operations with graphs. Izv. AN SSSR. Tekhn. fiz. 6:224-24  
1962. (MIRA 183)

L 31150-66 EWT(d) IJP(c)  
ACC NR: AP5019455 SOURCE CODE: UR/0378/65/000/003/0044/0052  
AUTHOR: Melikhov, A. N.; Dvoryantsev, Yu. A. 23  
ORG: none 8  
TITLE: <sup>16</sup>Expansion of graphs and finite automata with respect to the operation of multiplication  
SOURCE: Kibernetika, no. 3, 1965, 44-52  
TOPIC TAGS: graph theory, multigraph, isomorphism  
ABSTRACT: The multiplication of two graphs together is considered. It is demonstrated that this operation can be extended to finite automata. It is associative and satisfies the rule of commutativity with a precision approaching isomorphism. Two theorems are formulated setting forth necessary and sufficient conditions for expansion of a graph into the product of two graphs. The application of these results to the expansion of finite automata into the product of two automata are discussed and a theorem governing this expansion is presented. Orig. art. has: 8 figures, 19 formulas.  
SUB CODE: 12/ SUBM DATE: 28Dec64/ ORIG REF: 003/ OTH REF: 001  
UDC: 519.95-519.14  
Card 1/1 LC

KALYAYEV, A.V. (Taganrog); DVORYANTSEV, Yu.A. (Taganrog); MELIKHOV, A.N.  
(Taganrog)

Use of graph theory methods in the synthesis of potential networks.  
Izv. AN SSSR. Tekh. kib. no.4:65-69 J1-Ag '65. (MIRA 18:11)

MELIKHOV, B.T., inzhener.

Drying a transformer of medium capacity with a zero-sequence current without vacuum. Energetik 1 no.2:18-19 J1 '53.

(MLRA 6:8)

(Electric transformers)



MELIKHOV, B.T., inzhener.

Shortcomings of PS-10 and ShPS-10 drives. *Energetik* 2 no.5:20-21 Ky '54.  
(MLRA 7:6)

(Electric driving)

SOV-91-58-10-23/35

AUTHORS: Melikhov, B.T., Engineer, Il'nitskiy, N.G., Technician

TITLE: Defects in Type SAZU-I43 Electric Meters ( O nedostatkakh elektricheskikh schetchikov tipa SAZU-I43)

PERIODICAL: Energetik, 1958, Nr 10, pp 22 - 23 (USSR)

ABSTRACT: The author complains that out of a large consignment of type SAZU-I43 electric meters received by his thermo-electric power station, produced in 1957 by the Leningradskiy elektromekhanicheskiy zavod (Leningrad Electro-Mechanical Plant), 50% on inspection proved to have the spindles of the moving parts bent. The cause of this defect was that the attachment of the magnetic circuits to the housing by means of 2 M-4 screws was not reliable. During transportation, the magnetic circuits became displaced, were forced against the spindle or disc, causing the latter to become bent. The author asks the Leningrad Electro-Mechanical Plant to use a more reliable method of attaching the magnetic circuits.

1. Electric meters--Production

Card 1/1

~~MELIKHOV, B.F., inzh.~~

Simplification of relay-protection circuits and electric automatic devices and improvement of their reliability. Elek.sta. 30 no.1:74-76  
Ja '59. (MIRA 12:3)

(Automatic control) (Electric relays)

MELIKHOV, B.T., insh.

Standard designs of electric power distribution devices and substations. Elek. sta. 30 no.2:60-61 F '59. (MIRA 12:3)  
(Electric power distribution--Standards)

MELIKHOV, B.T., inzh.

Improvement in the schematic of automatic field quenching generators.  
Elek. sta. 31 no.12:77 D '60. (MIRA 14:5)  
(Electric generators)

S/196/62/000/001/010/013  
E194/E155

AUTHOR: Melikhov, B.T.

TITLE: A frequency controller with photo-resistance based  
on frequency meter Д-340 (D-340)

PERIODICAL: Referativnyy zhurnal, Elektrotekhnika i energetika,  
no.1, 1962, 28, abstract 1E 187. (Elektr. stantsii,  
32-no.7, 1961, 81)

TEXT: The main component of the controller is a pointer-  
type frequency meter type D-340 which uses as pick-ups semi-  
conductor resistances type ФСК-1 (FSK-1). The controller  
circuit is shown in the figure. The controlling element receives  
a signal from the photo-resistance fitted on the frequency meter  
scale. Holes are made on the scale at points corresponding to  
frequencies of 50.15 and 49.85 c/s and light passes through these  
from a lamp. The light ray can be interrupted by the instrument's  
pointer, so providing a signal. The command signals are  
obtained by means of a relay circuit. ✓

[Abstractor's note: Complete translation.]

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A frequency controller with ...

S/196/62/000/001/010/013  
E194/E155

Figure caption. Schematic circuit diagram of automatic frequency controller.  $\Phi 1$  and  $\Phi 2$  - photo-resistors type  $\Phi CK-1$  (FSK-1);  $P\Gamma 1$  and  $P\Gamma 3$  - intermediate relays;  $\Lambda$  - signal lamp in fitting AC-DC-38;  $PT$  - current relay type  $\Xi T-521/02$  (ET-521/02);  $P\Gamma 4$  and  $P\Gamma 5$  - intermediate time-delay relay type  $P\Xi 513/12$  (RE-513/12) with additional contacts;  $P4$  - frequency meter type D-340;  $1\omega P4$  and  $2\omega P4$  - busbars of frequency controller;  $\omega H a$  and  $\omega H c$  - busbars of voltage transformers;  $1\eta Y$  - changeover switch type  $K\Phi$  (KF) for switching the controller on and off (on the control board of each generator);  $2\eta Y$  - manual remote-control key type  $Y\Gamma$  (UP) operating an electric motor to control the governed turbine;  $\Delta$  and  $O\delta$  - electric motor controlling the turbine and its field winding;  $R1$  and  $R2$  - the additional resistances.

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MELIKHOV, F., glavnyy inzhener.

If you promised, you must keep your word. Sov.profsoinuzy 4 no.8:  
24-26 Ag '56. (MLRA 9:10)

1.Predsedatel' komissii po proizvodstvenno-massovoy rabote Panfi-  
lovskoy mashino-traktoynoy stantsii.  
(Panfilovo (Stalingrad Province)--Machine-tractor stations)



MELIKHOV, F.F., uchitel'

Apparatus for the preparation of ammonium chloride. Khim. v  
shkole 15 no.4:72-73 J1-Ag '60. (MIRA 13:9)

1. Srednyaya shkola No.5, g. Lipetsk.  
(Ammonium chloride)

MELIKHOV, F.F., uchitel'

Ways to activate extracurricular work. Khim. v shkole 16  
no.6:73-80 N-D '61. (MIRA 14:11)

1. Srednyay shkola No.5, Lipetsk.  
(Chemistry—Study and teaching)

MELIKHOV, G.A.

Bulldozer attachment for breaking up frozen ground. Rats. 1  
izobr. predl. v stroi. no. 112:20-24 '55. (MLRA 9:6)  
(Bulldozers) (Frozen ground)

CHZHAN SYUAN' [Chang Hsüan]; MELIKHOV, G.V.; KUMKES, S.N., red.;  
VILANSKAYA, E.N., tekhn.red.

[Navigation in ancient China] Morekhodstvo v drevnem Kitae.  
Moskva, Gos.izd-vo geogr.lit-ry, 1960. 69 p. (MIRA 13:5)  
(China--Navigation)

MELIKHOV, I.D., ved. red.

[Equipment used in the removal of dust in mines; an album]  
Oborudovanie, primeniamoe pri kompleksnom obespylivanii  
rudnikov i shakht; al'bom. Moskva, Nedra, 1964. 309 p.  
(MIRA 18:6)

DAVYDOV, Stepan Aleksandrovich; RUBTSOV, Vladimir Konstantinovich;  
DEMIDYUK, G.P., doktor tekhn. nauk, retsenzent; MELIKHOV,  
I.D., ved. red.

[Multiple-row blasting] Mnogoriadnoe vzryvanie. Moskva,  
Nedra, 1965. 94 p. (MIRA 18:6)

KOZLOV, K.K.; KONDRAT'YEV, Ye.T.; MELIKHOV, I.S.

Intermediate transformation of austenite. Metalloved. i term.  
obr. met. no.4:8-10 Ap '65. (MIRA 18:6)

1. Volgogradskiy zavod "Krasnyy Oktyabr'" i Volgogradskiy  
sel'skokhozyaystvennyy institut.

MELIKHOV, I. V.

5(2); 21(5) FRASE I BOOK EXPLANATION 307/1900  
 Akademika nauk SSSR. Komissiya po analiticheskoj khimii  
 Prikladnye radioaktivnyye izotopy v analiticheskoj khimii  
 (Use of Radioactive Isotopes in Analytical Chemistry) Moscow  
 Nedra An SSSR, 1958. 366 p. (Series: Nauch. Trudy, t. 9 (12))  
 Brata all insured. 3,000 copies printed.

Resp. Ed.: I. F. Alimarin, Corresponding Member, USSR Academy  
 of Sciences; Ed. of Publishing House: A. N. Yermakov; Tech.  
 Ed.: T. V. Polyakova.

PURPOSE: The book is intended for chemists and chemical  
 engineers concerned with work in analytical chemistry.

CONTENTS: The book is a collection of the principal papers  
 presented in Moscow at the Second Conference on the Use of  
 Radioactive Isotopes. The problems discussed at the  
 conference included coprecipitation, aging, and solubility  
 of precipitates, determination of the instability constants  
 of complex compounds, separation of rare earth metals, and  
 ion-exchange chromatography. No personalities are mentioned.  
 There are 31 references, 175 of which are Soviet, 33 German,  
 19 French, 8 Swedish, 2 Hungarian, and 2 Czech.

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(11)



MERKULOVA, M. S. and MELIKHOV, I. V. (Moscow State University im M. V. Lomonosov)

"Coprecipitation of Lead and Strontium Isotopes with Sodium Chloride Crystals"

Isotopes and Radiation in Chemistry, Collection of Papers of 2nd All-Union Sci.Tech. Conf. on Use of Radioactive and Stable Isotopes and Radiation in National Economy and Science, Moscow, Izd-vo AN SSSR, 1958, 330pp.

This volume publishes the reports of the Chemistry Section of the 2nd All Sci Tech Conf on Use of Radioactive and Stable Isotopes and Radiation in Science and the National Economy, sponsored by Acad. Sci. USSR and Main Admin for Utilization of Atomic Energy under Council of Ministers USSR, Moscow, 4-12 April 1957.

MELIKHOV, I.V.; MERKULOVA, M.S.

Some regularities of the coprecipitation of radioactive elements with crystalline carriers. Radiokhimiia 1 no.6:626-632  
'59. (MIRA 13:4)  
(Crystallization) (Radioactive substances)

MELIKHOV, I.V.; MERKULOVA, M.S.

Mechanism governing the migration of microquantities of cer-  
tain elements into the crystals of a nonisomorphic carrier.  
Radiokhimiia 1 no.6:633-636 '59. (MIRA 13:4)  
(Crystallization) (Lead--Isotopes) (Cadmium--Isotopes)



5(4)

AUTHORS:

Melikhov, I. V., Merkulova, M. S.,  
Eval'd, G.

SOV/20-125-4-44/74

TITLE:

The General Laws of the Co-precipitation of Micro-impurities  
During the Growth of Crystals (Obshchiye zakonomernosti  
socsazhdeniya mikroprimesei pri roste kristallov)

PERIODICAL:

Doklady Akademii nauk SSSR, 1959, Vol 125, Nr 4, pp 845-847  
(USSR)

ABSTRACT:

At present such crystals are widely being used in industry and  
practice as contain small quantities of a non-isomorphous  
impurity. Such impurities in most cases form solid solutions  
(with limited mixing possibility) with the crystal. The authors  
endeavored to determine the rules of the distribution of  
impurities in the crystals of the microcomponents with which  
the impurities form a solid solution with limited mixing pos-  
sibility and in the oversaturated solution (undercooled melt).  
The authors in this connection investigated the mechanism of  
the co-precipitation of the impurities with crystals growing  
in an oversaturated solution in the case of an intense mixing  
of the liquid phase. The first stage of this co-precipitation  
is interaction between the impurity and the separating surface

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The General Laws of the Co-precipitation of  
Micro-impurities During the Growth of Crystals

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of the phases. An expression is derived step by step for the concentration of the impurity in the surface mono-layer. For the purpose of experimental confirmation of the derived relations the co-precipitation of small quantities of  $PbCl_2$  and  $CdCl_2$  with NaCl-crystals is investigated. In these investigations the oversaturation of the solution was isothermally eliminated. The authors investigated the distribution of Pb- and Cd-isotopes in the crystals and the oversaturated solution of NaCl as a function of the concentration of the microcomponent in the liquid phase. The quantity of micro-components in the solid and in the liquid phase was determined by the method of radioactive indicators. The results obtained by these experiments quantitatively confirm the theoretically derived relations and permit the following conclusions to be drawn: 1) The rate of the exchange between the surface and the solution on the front of crystallization is considerably higher than that of the diffusion of the components by the surface-diffusion layer. 2) The quantity of the impurity going over into the solid phase during the growth of the

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The General Laws of the Co-precipitation of  
Micro-impurities During the Growth of Crystals

SOV/20-125-4-44/74

crystals and also the distribution of the impurity in the volume of the crystals of the precipitation may be determined from the formulas derived in the present investigation. There are 2 figures and 5 references, 1 of which is Soviet.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova  
(Moscow State University imeni M. V. Lomonosov)

PRESENTED: December 29, 1958 , by V. I. Spitsyn, Academician

SUBMITTED: December 24, 1958

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24389

S/186/60/002/002/003/022  
E071/E433

5 1150

AUTHORS: Melikhov, I.V., Ch'ia Hsiang-Hsi and Merkulova, M.S.

TITLE: On the problem of the coprecipitation of a micro-  
admixture during the crystallization of a macro-  
component from a supersaturated solution

PERIODICAL: Radiokhimiya, 1960, Vol.2, No.2, pp.144-151

TEXT: The problem of coprecipitation of an admixture during  
isothermal removal of a supersaturation of a solution of a macro-  
component has been discussed in the literature but, as yet, there  
are no definite views on the factors determining the character of  
distribution of the admixture between the solid and liquid phases  
under given conditions of crystallization. In a discussion of the  
existing views on the crystallization process applicable to the case  
of crystallization of a microadmixture with crystalline  
precipitates formed on isothermal crystallization of a macro-  
component from a supersaturated solution, the authors showed that  
the distribution of an admixture can be an equilibrium and a non-  
equilibrium one, depending on the conditions of crystallization,  
solubility, surface energy and density of the crystals of the  
macrocomponent and the velocity and method of formation of nuclei.  
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24359

S/186/60/002/002/003/022  
E071/E433

On the problem of the ...

temperature etc. By varying the above factors, a recrystallization of the solid phase during the period of an experiment can be obtained. On the other hand, the experimental conditions can be so chosen that no recrystallization of the precipitate formed takes place. In the latter case, the coprecipitation of an admixture with growing crystals of a main component can be studied. The authors investigated the coprecipitation of microquantities of thallium chloride with sodium chloride. In the preliminary experiments, the conditions under which no recrystallization of the precipitate takes place were determined. The experimental technique was described earlier (Ref. 8, Radiokhimiya, 1, 1, 3 (1959) and Ref. 17, Radiokhimiya, 1, 6, 633 (1959)). It was found that during crystallization of sodium chloride from a solution with an initial supersaturation of 3 to 4% on stirring with a screw mixer (200 rpm) a precipitate is formed which practically does not recrystallize over a period of 4 to 6 hours at 20°C. The minimum particle size of the crystals (about  $2.5 \times 10^{-3}$  cm) was considerably larger than the minimum stable size ( $1.8 \times 10^{-3}$  cm at 20°C) previously determined. Subsequently, the distribution of microquantities of thallium chloride between the solid and liquid phases was determined.

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was studied. The initial concentration of thallium was determined colorimetrically and the final content of thallium in the solid and liquid phases was determined radiometrically with an accuracy of  $\pm 3\%$  using  $Tl^{204}$ . On the basis of the experimental data the coefficient of heterogeneous distribution according to Doerner and Hoskins' formula (Ref.18: J.Am.Chem.Soc., 47, 662 (1925)) and the practical coefficient of distribution  $D_{pr}$  according to Khlopkin's formula (Ref.1: Izbr. tr., I, Izd.AN SSSR, M.-L. (1957)) were calculated. It was found that neither of the above two formulae describe the coprecipitation of thallium chloride with sodium chloride. The fact that thallium chloride is not partly precipitated by adsorption was checked by coprecipitation experiments in the presence of  $Al^{3+}$  ions. It is concluded that the distribution of the admixture in the solid state is heterogeneous. At the beginning of crystallization the concentration of the admixture in the solid state is high, with a decreasing degree of supersaturation it decreases and then remains constant. There are 2 figures, 2 tables and 10 references: 13 Soviet-bloc and 16 non-Soviet-bloc. Four of the references to English language publications read as follows.

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On the problem of the ...

21389  
S/106/60/002/002/005/02...  
EC71/E433

A.M. Feibush, K. Rowley, L. Gordon, Anal. Chem., 30, 1605 (1958);  
L. Gordon, J.I. Peterson, R.F. Furr, Anal. Chem., 27, 1770 (1957);  
G.W. Sears, J. Chem. Phys., 27, 979 (1958);  
R.H. Doremus, J. Phys. Chem., 62, 1068 (1958).

SUBMITTED: September 16, 1959

Card 4/4

5 1150

1043, 1273, 1245, 1418

20648

S/186/60/002/005/001/017  
A051/A130

AUTHOR: Melikhov, I. V.

TITLE: Co-crystallization of a micro-admixture with growing crystals

PERIODICAL: Radiokhimiya, v. 2, no. 5, 1960, 509 - 520

TEXT: The author and co-workers have conducted experiments for investigating the effect of mass-transfer on co-precipitation, and also, the interaction of the admixture with the interface surface of the various phases. A theoretical evaluation is given of the effect of surface processes and mass-transfer in solution form on the co-precipitation of the micro-admixture with crystals of the macrocomponent, growing in an over-saturated solution, and the causes are traced of the homogeneous and heterogeneous distribution. The significance of the study of co-crystallization of the micro-admixture with the growing crystals of the macro-component is pointed out for developing separation methods and the concentration of radio-elements. Referring to Ref. 11 (W. P. Slichter, R. C. Prim and I.A. Burton. J. Chem. Phys. 21, 11, 1987, 1953), the author states that in this work the interaction of the admixture with the surface of the solid phase

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S/186/60/002/005/001/017

AO51/A130

Co-crystallization of a micro-admixture...

was described by the relationship  $C_{adm_T} = \lambda C_{adm_L}$  (1), where  $C_{adm_T}$  and  $C_{adm_L}$  are the concentrations of the admixture on the surface layer of the crystal and in the solution, adhering to this surface, respectively,  $\lambda$  is a constant. The author of this article has investigated the co-precipitation with crystals growing comparatively slowly, so that at any given time there is an equilibrium distribution of the admixture between a layer A and the solution, adhering to this layer, and between a step and area of layer A, adhering to this step, when  $C_{adm_A} = A C_{adm_L}$  (2), where  $C_{adm_A}$  is the concentration of the admixture in layer A, away from the step, A - a constant at the given composition of the solution and temperature, (Ref. 12: I.V. Melikhov, M.S. Merkulova, Radiokhimiya, 1, 6, 627, 1959) and  $C_{adm_S} = G C'_{adm_L}$  (3) where  $C_{adm_S}$  is the concentration of the admixture, captured between the mono-layer,  $C'_{adm_A}$  - the concentration of the admixture in the area of layer A, adhering to the step, G - a constant at a constant temperature and com-

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Co-crystallization of a micro-admixture ....

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position of layer A. The said concentration values are found by solving the diffusion equation of the admixture from the volume of the solution, to the surface of the crystal (through layer  $\delta$ ) and by the surface diffusion of the admixture from layer A to the step. The first period of the macro-component crystal growth is not gone into, and in the second period of this growth it is assumed approximately that the diffusion of the macro-component and admixture during the elementary growing process is stationary and the concentrations  $C_{adm_L}$  and  $C'_{adm_A}$  may be determined from the

relationships given in Ref. 11. The given equation for surface diffusion is presented as follows:

$$C'_{adm_A} = \frac{C_{adm_A}}{e^{-\Delta(1-G)} + G} \quad (5),$$

where  $\Delta = \frac{\alpha}{q_{adm_A}} f$ ,  $f$  - the linear rate of crystal growth,  $\alpha$  - the width of the crystal surface, where a concentration gradient is noted,  $q_{adm_A}$  -

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Co-crystallization of a micro-admixture ....

surface diffusion coefficient of the admixture. The theoretical derivation of the diffusion differential equation is derived as follows: From equation (3) and (5) being equal:

$$C_{adm_S} = \frac{GC_{adm_A}}{e^{-\Delta}(1-G)+G} \quad (6)$$

The admixture concentration in layer S may change during the ion-exchange process of the deposited mono-layer with the solution according to the equation:

$$C_{adm_S} = C_{adm_T} - \int_0^T W_S dt + \int_0^T W_A dt \quad (7)$$

where  $C_{adm}$  is the concentration of the admixture in the surface layer of the crystal after ion-exchange of this layer with the solution during the time  $T$ .  $W_S = k_A C_{adm_A}$  is the rate of admixture transfer from layer A to

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Co-crystallization of a micro-admixture ....

layer S,  $W_A = k_s C_{adm_\tau}$  is the transfer rate of the admixture from layer S to layer A;  $k_A$  and  $k_s$  - the constants for the given composition of the solution and temperature. Equation (2) and (7) lead to:

$$C_{adm_\tau} = \left[ \frac{k_A}{k_s} (1 - e^{-\tau k_s}) + \frac{G e^{-k_s \tau}}{G(1 - e^{-\Delta}) + e^{-\Delta}} \right] A C_{adm_L} = \lambda' C_{adm_L} \quad (8)$$

If the value of  $\tau$  is equal to the time interval between the deposit of the mono-layer on the crystal surface and the coating of this layer by the next mono-layer, then formula (8) will determine the concentration of the admixture transferred to the volume of the growing crystal:

$$C_{adm_\tau} = \frac{d_x}{d_y} \quad (9)$$

where  $d_x$  and  $d_y$  are the quantities of admixture and macro-component, transferred to the mono-layer solid phase. Using formula (9) and that suggested

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by Ref. 11,

$$C_{adm_s} = \frac{x_0 - x}{\eta} \quad (11)$$

where  $x_0$  and  $x$  are the initial amount of admixture in the solution and that transferred to the solid phase, respectively,  $\eta$  - the solution mass; formula 8 is described as:

$$\frac{dx}{dy} = \frac{\lambda'(x_0 - x)}{\eta[e^{-\Delta_1}(1 - \lambda') + \lambda']} \quad (12)$$

It is pointed out that the results of the integration of the equation would depend on the crystallization conditions: 1)  $C_{m_s}$  (concentration of the macro component in solution) = const,  $C_{adm_s}$  = const,  $f$  = const; 2)  $C_{m_s}$  = const,  $f$  = const,  $C_{adm_s} \neq$  const. at  $\eta$  = const, or  $\eta \neq$  const; 3) both

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Co-crystallization of a micro-admixture ....

$C_{m_s}$  and  $C_{adm_s}$  are variable, causing the values of  $G$ ,  $A$ ,  $\lambda'$ ,  $\eta$ ,  $\Delta$ ,  $\Delta_1$ ,  $x$  and  $y$  also to change. Using formula (12) and formula (Ref. 20: W. Nernst, Z. phys. Ch. 47, 1, 52, 1904):

$$f = a \frac{y_0 - y - \eta b}{\eta} \quad (17),$$

the following equation is derived:

$$\frac{dx}{dy} = \frac{F(y) (x_0 - x) A}{\eta \left[ \exp \left\{ -\frac{\rho_1 (y_0 - y - \eta b)}{\eta} \right\} \{1 - AF(y)\} + AF(y) \right]} \quad (18)$$

where

$$F(y) = \frac{k_A}{k_s} \left[ 1 - \exp \left\{ -\frac{k_s \eta \cdot p}{(y_0 - y - \eta b) a} \right\} \right] + \frac{G \exp \left\{ -\frac{k_s \eta \cdot p}{a(y_0 - y - b)} \right\}}{\left[ \exp \left\{ -\frac{\rho_2 (y_0 - y - \eta b)}{\eta} \right\} (1 - G) + G \right]}$$

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S/186/60/002/005/001/017  
A051/A130

Co-crystallization of a micro-admixture ....

$$p_1 = \frac{a \delta}{q_{adm_s}}, \quad p_2 = \frac{a \cdot x}{q_{adm_A}}.$$

The author points out that a general solution for formula (18) was difficult to find and therefore, only certain cases were taken to simplify the equation. If the rate of growth of the crystal is such that the exchange of each surface layer with the solution does not have time enough to take place to any noticeable degree during time, then:

$$\frac{dx}{dy} = \frac{AG (x_0 - x)}{\eta \left[ e^{-\Delta 1} (1 - AG) + AG \right]}. \quad (24)$$

Thus, it is shown that an investigation of the effect of the surface processes and mass-transfer in solution, on the co-precipitation, makes it possible to explain the fact of formation of the homogeneous and heterogeneous mixed crystals during their growth in a solution of moderate oversaturation. The author further points out that the rate of exchange of the

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5/186/60/002/005/001/017

A051/A130

Co-crystallization of a micro-admixture ....

S layer with the solution has still not been clarified. It is assumed however, in the light of facts given in Ref. 23 (L. Imre, Kollid, Z., 13, 1, 21, 1953), that there are three stages of co-precipitation in isothermal removal of moderate oversaturation of the solution, containing the micro-admixture. The dependence of the quantity of the co-precipitated admixture, on the mass of the macro-component making up the residue  $[x = \varphi(y)]$ , may be complex. Experimental investigations of the crystallization of NaCl from that containing  $PbCl_2$  of an oversaturated solution were carried out which showed that certain conditions during crystallization take place expressed through the formula:

$$x = \frac{k_A x_0 y}{k_s \left( \eta + A \frac{k_A}{k_s} \{y_0 - b\eta\} \right)} \quad (22)$$

Condition one: the only process determining the nature of distribution of the admixture between the solid and liquid phases, is the growth of the residue crystals; recrystallization of the solid phase is absent. A qualitative evaluation of the part played by the small crystals during the removal process

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Co-crystallization of a micro-admixture ...

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of the oversaturation was performed by comparing the rate  $f_r$  of the change of the minimal size of the crystals and that of the average<sup>r</sup> linear rate  $f$  of the crystal growth of the residue.  $f$  was found to be:

$$f = \frac{1}{dQ} \frac{dy}{dx} \quad (27)$$

where  $d$  is the density of the crystals,  $Q$  - their geometrical surface,  $\frac{dy}{dx}$  - the rate of oversaturation removal.  $\frac{dy}{dx}$  was determined by differentiating the empirical ratio:

$$y = (y_0 - b\eta) \gamma [1 - \exp \{-\xi (t - t_0)\}] \quad (28)$$

where  $\gamma$  and  $\xi$  are the empirical constants,  $t_0$  - the period of induction, (Ref. 29: S.V. Gorbachev, A. V. Shlykov, ZhFKh, 29, 1, 13, 1955). The values of  $f_r$  and  $f$  were found to vary symbathically. The author further investigated the ability of the NaCl crystals separated out of the over-

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S/186/60/002/005/001/017

A051/A130

Co-crystallization of a micro-admixture ...

saturated solution, to recrystallization, leading to an improvement of the crystal structure (structural recrystallization). These experiments showed that within the margins of error of the experiment the structural recrystallization of the solid phase is absent. Condition two: The period of diffusion stream formation  $t_1$  is insignificantly small. The period  $t_1$  is evaluated by using the rate of growth of the crystals at the starting point of crystallization  $f_0$ , the latter being only approximately calculated. When the value of  $f_0$  is assumed to be determined only by the diffusion of the macro-component to the crystal surface, then

$$f_0 = \frac{3q_M(y_0 - b\eta)}{\gamma\delta d} \quad (31)$$

according to Ref. 19 (A. V. Gorodynskiy, Yu. K. Delinarskiy, DAN SSSR, 114, 6, 1261, 1957). The latter formula is also used to calculate  $\delta$ .  $t_1$  is calculated from formula

$$t_1 \propto \frac{\delta^2}{q_{mp}} \quad (4)$$

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Co-crystallization of a micro-admixture .....

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A051/A130

suggested Ref. 19, where  $q_{M_p}$  is the diffusion coefficient of the macro-component in the solution. The calculations showed that the macro-component crystals, almost from the moment of their formation, grow in the oversaturated solution under conditions of streams of diffusion of solution particles, to the surface of the solid phase. Condition three: The change in conditions of mass-transfer of the crystals to the surface during the removal of the oversaturation process, does not affect the co-precipitation of the micro-admixture ( $\rho_1 \approx \text{const}$ ,  $\rho_2 \approx \text{const}$ ). The author was able to show that a change in the value of  $\delta$  does not affect the coprecipitation of the microadmixture with NaCl (Figure 2). The experimental results obtained are explained in the following manner: during the first period of coprecipitation ( $0 < t < t_2$ ). The rate  $f$  is so great that the ion-exchange of the surface layers of the crystals with the solution does not take place completely (stage I and II,  $F(y) \neq Q$ , the constant value of the function from a given moment of crystallization  $t_2$ ). With a slowing down of the growth and increase in the degree of concentration exchange,  $C_{adm_s}$  either in-

creases or decreases (the system NaCl-TlCl), if the admixture enriches or

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Co-crystallization of a micro-admixture ....

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A051/A130

correspondingly impoverishes the solid phase. A significant amount of the macro-component crystallizes in the latter system during the time  $t_2$ , and, thus, the change of the concentration  $C_p$  is caught up during the study of the co-precipitation. In the systems NaCl-PbCl<sub>2</sub> and NaCl-CdCl<sub>2</sub> the period of time  $t_2$  is very small, and during this period only a slight amount of NaCl crystallizes, since the PbCl<sub>2</sub> and CdCl<sub>2</sub> retard the growth of the macro-component crystals. The third stage of co-precipitation actually begins at the initial moment of crystallization. Thus, the experimental findings were found to correspond with theoretical assumption with respect to the effect of the surface processes and mass-transfer in the liquid phase, on the transfer of the admixture to crystals. The author considers it correct to assume from calculations made that the cations of the macro-component exchange with the solution at the same rate as the ions Tl, i.e., the absolute rate of the exchange of the S layer with the solution  $W = 2 \cdot 10^{-6}$  moles/sec.  $\cdot$  cm<sup>2</sup>. There are 2 tables, 2 graphs and 30 references: 10 Soviet-bloc, 20 non-Soviet-bloc. The four recent English language publications read as follows: (Ref. 11) W.P. Slichter, R. C. Prim, Card 13/15



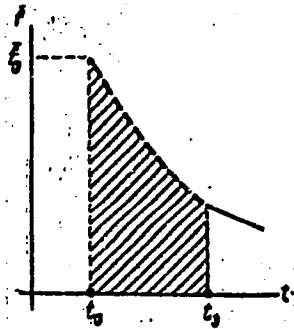
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Co-crystallization of a micro-admixture ....

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A051/A130

J. A. Burton, J. Chem. Phys., 21, 11, 1937, 1953; (Ref. 8) A. M. Feibusch, K, Rowley, L. Gordon, Anal. Chem., 30, 10, 1605, 1958; (Ref. 16) G. W. Sears, J. Chem. Phys., 29, 1045, 1958; (Ref. 17) R. H. Doremus. J. Phys. Chem., 62, 9, 1068, 1958.

Figure 1: The relationship of the rate of growth of the crystals  $f$  to the time of oversaturation removal  $t$ .



Card. 14/15

MELIKHOV, I.V.; TSYU SYAO-SI [Ch'iu Hsiao-hsi]; MERKULOVA, M.S.

Coprecipitation of micro impurities during the crystallization of  
the macro component from a supersaturated solution. Radiokhimiia 2  
no.6:144-151 '60. (MIRA 14:4)

(Crystallization)  
(Precipitation (Chemistry))

MELIKHOV, I.V.; TSYU SYAO-SI; MERKULOVA, M.S.

Interaction between a microimpurity and the surface of crystals. Dokl.AN SSSR 133 no.2:401-404 J1 '60.

(MIRA 13:7)

1. Moskovskiy gosudarstvennyy universitet imeni M.V.Lomonosova.  
Predstavleno akademikom V.I.Spitsinym.  
(Crystals)

MELIKHOV, I. V.

Cand Chem Sci - (diss) "Study of the formation of solid solutions of radio-elements in carrier crystals separating from the liquid phase." Moscow, 1961. 8 pp; (Moscow Order of Lenin and Order of Labor Red Banner State Univ imeni M. V. Lomonosov, Chemistry Faculty, Chair of Radiochemistry); 200 copies; price not given; bibliography on pp 7-8; (KL, 6-61 sup, 199)

**BABAYAN, S.G.; PAKHOMOV, B.G.; MELIKHOV, I.V.; MERKULOVA, N.S.**

Method of studying the kinetics of crystallization of supersaturated solutions. Radiokhimiya 3 no.5:391-395 '61. (MIRA 14:7)  
(Crystallization)

S/186/61/003/005/001/022  
E132/E335

AUTHOR: Melikhov, I.V.

TITLE: On the determination of the rate of interaction of  
micro-impurities with the surfaces of crystals

PERIODICAL: Radiokhimiya, v. 3, no. 5, 1961, 513 - 519

TEXT: As a result of theoretical analysis it is shown that if the deposition of micro-impurities occurring simultaneously with the growth of a crystal is studied, then the rate of interaction of the impurity particles with the surface of the solid phase can be determined. Formulae are deduced which describe the change in the distribution coefficient  $\lambda$  on decreasing the rate of growth of crystals of the macro-component. An adsorbed layer A is considered to lie over a solid layer S and equations are set up relating the rates of adsorption, desorption and exchange between these layers and the adjacent layer of the liquid L. The conditions of supersaturation and stirring may also be varied. Rough graphical indication of the variation of  $\lambda$  under various conditions is given.

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On the determination ....

S/186/61/003/005/001/022  
E132/E335

There are 1 figure and 12 references: 4 Soviet-bloc and 8 non-Soviet-bloc. The four latest English-language references mentioned are: Ref. 2 - K.H. Lieser, W. Hild. Paper at the Conference on Use of Isotopes in Physics and Industry, Copenhagen, Sept. 6-17, 1960; Ref. 3 - A. Chretien, J. Heubel, C.r. Acad. Sci., 242, 24, 2837, 1956; Ref. 9 - G.H. Giles, H.V. Mehta, S.W.K. Paham, C.E. Stewart. J. Appl. Chem., 9, 9, 457, 1959; Ref. 12 - A.E. Nielsen, Acta chem. scand., 13, 8, 1680, 1959.

SUBMITTED: January 5, 1961

Card 2/2

S/186/61/003/005/002/022  
E132/E335

AUTHORS: Melikhov, I.V., Babayan, S.G. and Merkulova, M.S.

TITLE: A study of the co-deposition of micro-impurities during the isothermal lowering of the supersaturation of the solution 1. Crystallisation of  $K_2SO_4$  from 1.5N  $HNO_3$

PERIODICAL: Radiokhimiya, v. 3, no. 5, 1961, 520 - 527

TEXT: By studying the granulometric composition the capability for isotope exchange with the solution and the kinetics of the separation of deposits of  $K_2SO_4$  from supersaturated solutions of this salt in 1.5N  $HNO_3$  at different initial supersaturations ( $S_0 \leq 17.1\%$ ), it has been shown that on changing the initial supersaturation from 0 to 85% the growth of the crystals of the solid phase appear to be practically the only process which must be taken into account when studying the co-deposition of micro-impurities. However, on putting the supersaturation up from 85% to 100 %, structural recrystallisation of the deposit has also to be considered. The experimental

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E132/E335

A study of ....


measurements were made as follows: a solution was cooled from 70 to 25 °C so that at the latter temperature it would be super-saturated. It was stirred at a high and constant rate; the precipitate was separated quickly, the amount of salt in the mother liquor being estimated conductometrically. The deposit was microscopically studied to estimate grain size, shape and volume. Curves were obtained of the amount of  $K_2SO_4$  separated from the solution against time of stirring; of the particle-size distribution of the precipitate; of the change in mean particle volume with increasing precipitation from a given supersaturation; of the same on a mass basis; of the change in the mass of the precipitate which takes part in exchanges of material with the solution plotted against the increasing total mass of precipitate; of the isotopic exchange between the precipitated  $K_2SO_4$  and the solution. A further communication will deal with the co-precipitation of lanthanum during the process of lowering the supersaturation of the

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A study of ....

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solution of the macro-component. V.I. Grebenshchikova is mentioned in the article for her contributions. There are 8 figures, 1 table and 14 references: 13 Soviet-bloc and 1 non-Soviet-bloc.



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MELIKHOV, I.V.; BABAYAN, S.G.; MIKULAY, V.

Coprecipitation of microimpurities during the isothermal stripping  
of a saturated solution of  $K_2SO_4$ . Part 2: Coprecipitation of  
lanthanum with  $K_2SO_4$ . Radiokhimiya 4 no.1:7-13 '62. (MIRA 15:4)  
(Lanthanum) (Potassium sulfate)

BABAYAN, S.G.; MELIKHOV, I.V.; MERKULOVA, M.S.

Coprecipitation of cerium with  $K_2SO_4$  crystals. Part 1:  
State of cerium in solutions in  $K_2SO_4$ . Radiokhimiya  
4 no.4:381-387 '62. (MIRA 15:11)  
(Cerium sulfate) (Potassium sulfate)  
(Precipitation (Chemistry))

MELIKHOV, I.V.; KIRKOVA, Ya.K.

Coprecipitation of Ce with  $K_2SO_4$  crystals. Part 3:  
Interaction of  $Ce^{3+}$  with the surface of  $K_2SO_4$  crystals.  
Radiokhimiia 6 no. 1:5-11 '64. (MIRA 17:6)

MELIKHOV, I.V.; KIRKOVA, Ye.K.; MERKULOVA, M.S.

Coprecipitation of Ce with  $K_2SO_4$  crystals. Part 5: Behavior of Ce during the recrystallization of a  $K_2SO_4$  precipitate in a saturated aqueous solution of macrocomponents. Radiokhimiia 6 no.2:165-172 '64. (MIRA 17:6)

MELIKHOV, I.V.

Determination of equilibrium in the distribution of an impurity  
between crystals and liquid phase. Vest. Mosk. un. Ser. 2: Khim.  
19 no.6:24-26 N-D '64. (MIRA 18:3)

1. Kafedra radiokhimii Moskovskogo universiteta.

L 55026-45 EWT(m)/I/EWP(t)/EWP(b)/EWA(c) JD

ACCESSION NR: AP5011850

UR/0189/65/000/002/0030/0033

AUTHOR: Melikhov, I. V.

TITLE: A new method for determining the equilibrium coefficient of the distribution of a microcomponent between the solid and the liquid phases of the carrier

SOURCE: Moscow. Universitet. Vestnik. Seriya 2. Khimiya, no. 2, 1965, 30-33

TOPIC TAGS: equilibrium coefficient, liquid phase, solid phase, temperature effect

ABSTRACT: The coefficient of the distribution of a microcomponent between the solid and the liquid phases was studied to expand and develop the work of V. G. Khlopin (Izbrannyye trudy, t.I. Izd-vo AN SSSR, M, 1957, str. 173) and of his followers. The method of forced recrystallization was used in the determination of the distribution coefficient D. The success of the method depends upon the fact that the solubility of the macrocomponent is a function of the temperature. The supersaturated macrocomponent coprecipitates some of the microcomponent in vessel A. Part of the precipitate is then carried by the circulating current to vessel B. In vessel B the macrocomponent dissolves and releases the coprecipitated microcomponent (see Fig. 1 on the Enclosure). The result is the formation of two countercurrents  $m_1$  and  $m_2$  given by

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L 55026-65

ACCESSION NR: AP5011850

$$m_3 = P_A \left[ \frac{dC_r}{dt} + 6C_r \frac{a_p}{b} fS \right],$$

$$m_2 = m_1 - P \frac{dC}{dt},$$

where  $P_A$ ,  $\bar{S}$  and  $\rho$  are the mass, specific surface, and the density of the precipitate forming in vessel A;  $d$  and  $C$  are the concentration of the microcomponent in the growing crystals of the macrocomponent and the solution respectively;  $f$  is the rate of particle growth of the solid phase;  $a$  and  $b$  are the volume and surface shape factor of the crystals;  $t$  the duration of forced recrystallization, and  $P$  the mass of the liquid phase. In the region of crystal sizes

$$2 \cdot 10^{-3} \text{ cm} < \bar{r}_0 \leq 2 \cdot 10^{-2} \text{ cm}$$

the attainment of dynamic equilibrium for  $4 < t < 9$  hours is independent of particle size. For the system NaCl-AgCl-H<sub>2</sub>O and KCl-RbCl-H<sub>2</sub>O at  $25 \pm 0.3^\circ\text{C}$ ,  $d$  was found to be  $15 \pm 0.5$  and  $0.15 \pm 0.03$  respectively. For both cases the value of  $d$  was independent of the concentration of the microcomponent in the equilibrium mixture. Orig. art. has: 2 graphs, and 3 equations.

ASSOCIATION: Moskovskiy universitet, Kafedra radiokhimii (Moscow University, Department of Radio Chemistry)

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L 55024-55

ACCESSION NR: AP5011850

SUBMITTED: 10Nov64

ENCL: 01

SUB CODE: 55GC

NO REF SOV: 004

OTHER: 000

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L 55026-65

ACCESSION NR: AP5011850

ENCLOSURE: 01

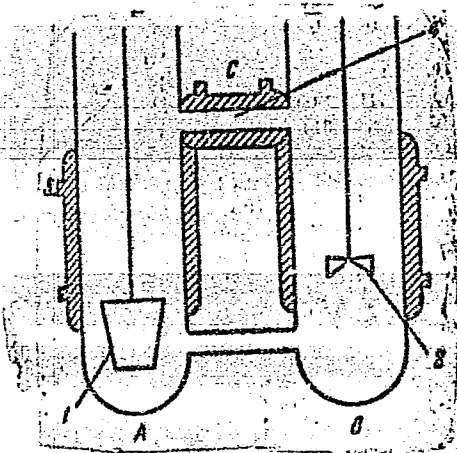


Fig. 1. Experimental setup for the determination of the distribution coefficient by the method of forced recrystallization.

- 1- Archimedean stirrer;
- 2- stirrer insuring uniform dissolution of precipitate;
- 3- thermostat at  $T_2$ ;
- 4- filter

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MELIKHOV, I.V.; BURLAKOVA, Ye.V.; BERDONOSOVA, D.

Equilibrium distribution of an impurity between solid and liquid phases. Part 4: Modeling of distribution in Ostwald's ripening. Radiokhimiia 7 no.4:377-386 '65. (MIRA 18:8)

MELIKHOV, I.V.

New method of determining the equilibrium coefficient of distribution of the microcomponent between the solid and liquid phases of a carrier. Vest. Mosk. un. Ser. 2: Khim. 20 no.2:30-33 Mr-Apr '65. (MIRA 18:7)

1. Kafedra radiokhimii Moskovskogo universiteta.

MELIKHOV, I.V.; MERKULOVA, M.S.

Mechanism of the transfer of impurities from a solution to the precipitate.  
Trudy Kem. anal. khim. 15:244-259 '65. (MIRA 18:7)

ZABORENKO, K.B.; GUN SHU CHUN' [Kung Shu-ch'un]; MELIKHOV, L.L.; PORTYANOV, V.A.

Use of the complex emanation-thermal method for studying the  
decomposition of manganese and iron oxalates. Radiokhimiia 6  
no.6:749-755 '64. (MIRA 18:2)

L 63623-65 EMT(m) Feb DIAAP

ACCESSION NR: AP5017001

UHL/0188/65/007/003/0319/0324

546.296'54.22

AUTHOR: Zaborenko, K. B. ; Melikhov, L. L. ; Portyanov, V. A.

10  
8+1

TITLE: The composite emanation-thermal method

SOURCE: Radiokhimiya, v. 7, no. 3, 1965, 319-324

TOPIC TAGS: radioactive emanation, differential thermal analysis, radioactive gas analysis

ABSTRACT: In order to create optimum conditions for applying the emanation method (which is a variant of the method of tagged atoms and involves the analysis of gaseous radioactive products), to obtain a reproducible pattern of emanation, and to permit a direct comparison of the results of emanation measurements with data obtained by other methods of physicochemical analysis, a device for a composite emanation-thermal analysis was developed at the Kafedra radiokhimii Moskovskogo gosudarstvennogo universiteta (Radiochemistry Department of Moscow State University). The instrument permits a continuous recording of the emanation, shrinkage, and weight by means of an electronic potentiometer under controlled conditions, and makes it possible to perform a differential thermal analysis of the preparations. Since all the measurements are made under completely similar conditions, the composite analysis provides information on the processes

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ACCESSION NR: AP5017001

taking place during the heating of solids and their mixtures. Work done with the device in the course of three years showed good performance characteristics and the advantages of using the emanation-thermal method for solving problems in theoretical and applied chemistry. Diagrams of the device and of the positioning of the preparations, as well as circuit diagrams, are given. Orig. art. has: 6 figures.

ASSOCIATION: None

SUBMITTED: 23Jul64

ENCL: 00

SUB CODE: GC, NP

NO REF SOV: 002

OTHER: 004

Card

2/2

MELIKHOV, I.V.

Present state of knowledge of the process of cocrystallization  
of microimpurities with crystalline precipitates. Radiokhimiia  
6 no.2:137-153 '64. (MIRA 17:6)

MELIKHOV, I.V.; BABAYAN, S.G.

Coprecipitation of cerium with  $K_2SO_4$  crystals. Part 4:  
Coprecipitation of Ce during  $K_2SO_4$  crystallization from a neutral  
solution. Radiokhimiia 6 no.2:153-165 '64. (MIRA 17:6)



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S/153/60/003/02/13/034  
B011/B003

5.4110

**AUTHORS:** Zaborenko, K. B., Babeshkin, A. M., Melikhov, L. L.

**TITLE:** Application of the Emanation Method for the Investigation of Processes Occurring With the Solid Substance on Heating

**PERIODICAL:** Izvestiya vysshikh uchebnykh zavedeniy. Khimiya i khimicheskaya tekhnologiya, 1960, Vol. 3, No. 2, pp. 288-292

**TEXT:** In the paper under review the authors attempted to clarify some phenomena which influence the separation of emanation. They constructed an improved apparatus for the study of transformations of solid bodies by means of the emanation method. The apparatus was designed on the basis of the one previously described (Refs. 3,5). For automatic recording of the measurement results a converter was connected to the electromechanical counter (Type PS-64). A zero-current relay which controlled the printing chronograph was installed at the output of the device. A connection in series of two converters enabled

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Application of the Emanation Method for  
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the recording of the instant of the pulse arrival on the chronograph; these pulses corresponded to one of the conversions (1, 4, 16, 256, 1,024, 4,096). A special small-volume chamber was devised in order to study the rapid transformations with time of the emanation of preparations. The furnace temperature was controlled by means of a reconstructed apparatus of type EPP-09. The character of the polythermal lines of emanation is determined by the chemical nature of the substance to be investigated, but depends on a number of factors. The temperature intervals in which the effects were observed on the emanograms are determined by the chemical nature and by the structure of the substance; they are, however, dependent on the rate of the temperature change except at 2 - 5 degrees/min. The shape of the polythermal lines is not only influenced by the size of particles of the powder sample, but also by the production conditions of the solid substance, i.e., by the true structure of its crystals. The emanation of preparations with a different pre-treatment may differ considerably. Barium metatitanate met the requirements excluding these disadvantages. The mother elements of the thorium and radium emanations enter the

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Application of the Emanation Method for  
the Investigation of Processes Occurring  
With the Solid Substance on Heating

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crystal lattice of the barium titanate isomorphously. Thus, possible side-effects are eliminated. Barium metatitanate was prepared from barium carbonate which contained mesothorium-1 and decay products. Polythermal lines of the formation of the barium carbonate emanation, an equimolar mixture of barium carbonate and titanium dioxide and barium metatitanate, respectively, are illustrated in Figs. 1-3. Hence it may be seen that up to  $920^{\circ}$  the change in the formation of the mixture emanation corresponds to the conversions of the barium carbonate. Above  $940^{\circ}$  the course of the curves varies. There are no effects in connection with the formation of the eutectic  $\text{BaO} \cdot 2\text{BaCO}_3$ , its decomposition and the complete decomposition of  $\text{BaCO}_3$ . The emanation formation rate slows down between  $990 - 1,100^{\circ}$ . The reversible polymorphous conversions of the metatitanate begin at  $1,210^{\circ}$ . Two unknown cubic phases are formed. In conclusion, the authors state that the separation of emanation is satisfactorily expressed by a diffusion equation. The variation of the porosity of the sample on heating strongly affects the course of the polythermal

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Application of the Emanation Method for  
the Investigation of Processes Occurring  
With the Solid Substance on Heating

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lines of emanation. The article under review was read at the 1.  
Mezhvuzovskaya konferentsiya po radiokhimii (Interuniversity Conference  
of Radiochemistry) in Moscow, April 20 - 25, 1959. Mention is made of  
L. S. Kolovrat-Chervinskiy. There are 4 figures and 12 references,  
8 of which are Soviet.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet imeni M. V.  
Lomonosova; Kafedra radiokhimii (Moscow State University  
imeni M. V. Lomonosov; Chair of Radiochemistry)

X

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ZABORENKO, K.B.; TETNER, R.; MELIKHOV, L.L.

Use of the emanation method in the study of calcium silicate  
hydrates. Radiokhimiia 5 no.3:360-369 '63. (MIRA 16:10)

(Calcium silicates) (Radon)

MELIKHOV, L.V.; STASYUK, V.N., redaktor; BYKHOVSKAYA, S.N., redaktor;  
PROZOROVSKAYA, V.L., tekhnicheskij redaktor.

[Electrical diagrams for industrial electric locomotives of the  
IVKP series] Elektricheskie skhemy promyshlennykh elektrozov  
serii IVKP. Moskva, Ugletekhizdat, 1952. 139 p. [Microfilm]  
(Electric locomotives) (MLBA 7:11)

MELIKHOV, L.V.

Calculating the specific consumption of electric energy for train  
traction in electrified coal pits. Ugol' 31 no.2:34 P '56.  
(MLBA 9:5)

(Electricity in mining) (Mine railroads)

MELIKHOV, L. V., Cand. Tech. Sci. (diss) "Improvement of  
Utilization of Trained Weight of Electric Locomotives for Coal  
Workings," Moscow, 1961, 24 pp. (Dnepropetrovsk Mining Inst.)  
200 copies (KL Supp 12-61, 270).

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Some problems in improving the use of the adhesion weight of  
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(MIRA 15:9)  
(Mine railroads)

SOKOLOV, A.V., inzh.; MELIKHOV, L.V., inzh.

Automatic control of electric locomotives in quarries.  
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INGERBAYEV, Ya., dorozhnyy master; SABUROV, V.G., dorozhnyy master;  
KHOMENKO, A.Ye., inzh.-mekhanik; PETROV, V.S., master po ekspluatatsii  
mashin; MELIKHOV, M.V., starshiy dorozhnyy master; MEDVEDEV, N.A.,  
starshiy dorozhnyy master

Letters to the editors. Put' i put.khoz. 9 no.6:36 '65.  
(MIRA 18:6)

1. Stantsiya Chelkar, Kazakhskoy dorogi (for Ingerbayev).
2. Stantsiya Berdyaush, Yuzhno-Ural'skoy dorogi (for Saburov).
3. Stantsiya Shors, Yugo-Zapadnoy dorogi (for Khomenko).
4. Stantsiya Konosha II, Svernoy dorogi (for Petrov).
5. Stantsiya Astrakhan' I, Privolzhskoy dorogi (for Melikhov, Medvedev).

MELIKHOV, P. ; GARIST, A.

Collective Farms

Forestry on the collective farm. Kolkh. proizv. 12 No. 9, 1952.

Monthly List of Russian Accessions, Library of Congress, December 1952. Unclassified.



KHASIN, G.A.; KOLYASNIKOVA, R.I.; VACHUGOV, G.A.; BOYARSHINOV, V.A.;  
GAVRILOV, O.T.; ALEKSEYENKO, M.F.; MELIKHOV, P.I.; VYBORN OV, A.F.

Electric slag refining of stainless, heat-resistant steel.  
Stal' 23 no.10:908-910 0 '63. (MIRA 16:11)

ACCESSION NR: APL029125

S/0133/64/000/004/0320/0323

AUTHORS: Melikhov, P. I.; Boyarinova, A. P.; Grashchenkov, P. M.; Mel'kumov, I. M.

TITLE: Industrial development of smelting new stainless heat-resistant steel SN-2 (EI904)

SOURCE: Stal', no. 4, 1964, 320-323

TOPIC TAGS: steel, stainless steel, stainless heat-resisting steel, steel SN-2 (EI904), austenite-martensite steel, carbon admixture, nickel admixture, phase composition

ABSTRACT: Austenitic-martensitic steel SN-2 (EI904) is now being smelted in arc furnaces of industrial capacity. Small inclusions of carbon and nickel alter the phase composition of steel, thus giving it the desired properties. The chemical composition of the steel (in %) is:

C	Mn	Si	Cr
0.05-0.09	<0.7	<0.7	14.8-16.5
Ni	Al	S	P
7.0-9.4	0.9-1.4	<0.025	<0.025

Card 1/3

ACCESSION NR: AF4029125

In normalized condition SN-2 is austenitic, soft, and extremely malleable; it becomes martensitic and acquires higher strength in quenching. The addition of carbon is most effective in imparting austenitic structure. Since the martensitic structure is magnetic and austenitic is not, the state of this intermediate steel may best be determined by its magnetic properties. This is accomplished by placing a sample in a magnetizing coil of a device designed by G. D. Kubyshkina. In the presence of magnetic phase the interaction of the primary and the secondary coils of this device motivate an indicator needle. Steel SN-2 is produced in 5- and 20-ton furnaces, either of fresh materials without oxidation or of carbon-bearing materials oxidized with iron ore and oxygen). Batches (with aluminum added were designed to contain a high amount of martensite, and carbon was introduced to produce the transitional austenitic-martensitic phase structure. The resulting material was classified as "soft" (magnetism  $M = 3-11$  mv) or as "hard" ( $M = 12-18$  mv). After proper alloying and purification, the batches were blown through with argon and cast into ingots of 500, 1000, and 2100 kg. The ladle temperature of metal in 5-ton furnaces was 1540-1615C, in 20-ton furnaces 1530-1660C (measured with a submerged thermocouple). Small ingots were stripped and forged, while the 2100-kg ones were hot-pressed in the rough condition. All the samples showed acceptable properties, except that those with magnetization of

Card 2/3

ACCESSION NR: AP4029125

15.1 and 17.3 mv were low in toughness. This characteristic may be remedied, however, by lowering the aging temperature from 500 to 450C. Orig. art. has: 2 graphs and 4 tables.

ASSOCIATION: none

SUBMITTED: 00

DATE ACQ: 28Apr64

ENCL: 00

SUB CODE: ML

NO REF SOV: 001

OTHER: 001

Card 3/3

L 12175-66 EWT(m)/EWA(d)/EWP(t)/EWP(z)/EWP(b) MJW/JD

ACC NR: AP6000173

UK/0148/65/000/009/0080/0085

AUTHOR: Melikhov, P. I., Stepanov, A. V.

ORG: none

TITLE: Effect of new methods of melting and argon degassing on the properties of EP-65 stainless steel

SOURCE: IVUZ. Chernaya metallurgiya, no. 9, 1965, 80-85

TOPIC TAGS: induction melting, electroslag melting, argon, degassing, nonmetallic inclusion/EP-65 stainless steel

ABSTRACT: EP-65 steel is used to fabricate high-load-bearing elements that withstand temperatures of up to 500°C, and its melting involves the formation of a large amount of gases and nonmetallic occlusions which cause hairline cracks and other defects in the products and reduce the mechanical properties of the steel. In this connection, the authors investigated the effect of new production techniques -- vacuum induction melting, electroslag melting and argon degassing -- on the quality of this steel. Argon degassing was carried out by bubbling argon through a ladle of 500 kg capacity, via a porous refractory plug at ladle bottom, for 2-3 min; the plug was designed by the authors (Fig. 1). The steel from the induction furnaces and after argon degassing was cast into ingots weighing 50 and 100 kg. The 50-kg ingots were used to prepare

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L 12175-66

ACC NR: AP6000173

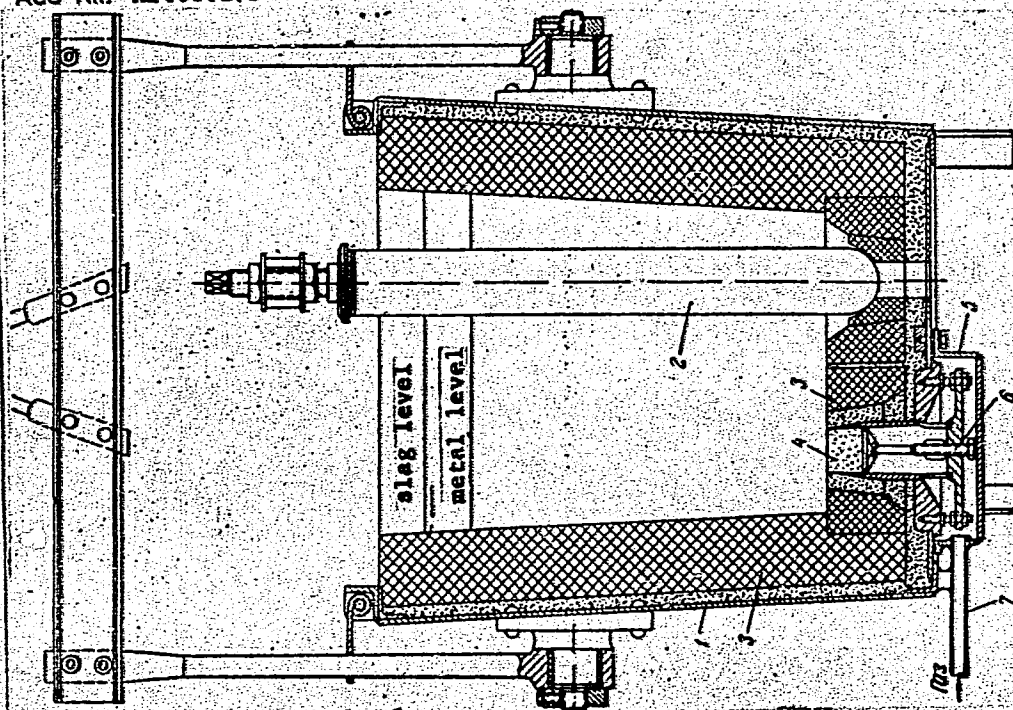


Fig. 1. Ladle of 500-kg capacity with porous plug at bottom  
 1 - ladle casing; 2 - stopper; 3 - ladle lining;  
 4 - porous plug; 5 - gas supply box; 6 - check screw; 7 - gas supply tube

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ACC NR: AP6000173

specimens and the 100-kg ingots, as consumable electrodes for remelting in a vacuum induction furnace ( $2 \cdot 10^{-2}$  to  $5 \cdot 10^{-3}$  mm Hg), or in an ANF-6 electroslag furnace. Findings: the chemical composition of the steel following vacuum-induction and electroslag melting and argon degassing was the same as that of original steel. On the other hand, the macrostructure of the ingots obtained by vacuum-induction and electroslag melting was uniformly compact and lacked visible traces of shrinkage porosity and other macrostructural defects, whereas ingots of original steel displayed a distinct shrinkage porosity. Compared with the original steel, the gas content and contamination by nonmetallic oxide inclusions (as determined by the electrolytic dissolution method) of the steel melted in vacuum-induction and electroslag furnaces and argon-degassed are much lower. Further, the mechanical properties (impact strength, plasticity, relative elongation) of the steel melted by the vacuum-induction and electroslag methods and argon-degassed are superior to those of the original steel, and the anisotropy of these properties is smaller, owing chiefly to the marked decontamination of the steel with respect to nonmetallic oxide inclusions. Orig. art. has: 3 figures, 4 tables.

SUB CODE: 11, 13/ SUBM DATE: 23Jul64/ ORIG REF: 000/ OTH REF: 000

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BUSHMAKIN, Yu.A.; BRYNDIN, V.V.; MOSKVIN, N.I.; GRASHCHENKOV, P.M.;  
MELIKHOV, P.M.

Developing a technology for the production of valve spring strip  
of Kh15N9IU stainless steel. Stal' 25 no.12:1129-1132 D '65.  
(MIRA 18:12)



1ST AND 2ND COLUMNS										3RD AND 4TH COLUMNS									
PROCESSES AND PROPERTIES INDEX																			
<p>2</p> <p>An investigation of methods for dyeing knitted goods with vat dyes. S. A. Melikhov. <i>Legkaya Prom.</i> 2, No. 5/1, 26-31 (1945). A study was made of the effects of temp. and duration of dyeing, of auxiliary chemicals and of the conditions of prepn. of the vat on the quantity of dye (Chloroanthracene Blue) absorbed. Absorption was detd. by dissolving 0.2 g. of dyed material in 100 g. of <math>H_2SO_4</math> (d. 1.84), transferring to a beaker contg. 20-30 ml. of a 1% gelatin soln. in 375 ml. of <math>H_2O</math>, and comparing the color of the mixt. with that of dye solns. of known concn. Before dyeing, the dye should be completely reduced and the fabric should be steeped in a <math>Na_2S_2O_4</math> soln. The optimum temp. is 40-50°. Raising the temp. to 80-90° does not increase the quantity of dye absorbed, and causes snears. It is preferable to boil the fabric before dyeing. Gradual addn. of <math>Na_2S_2O_4</math> during the dyeing has no effect. Soaping after dyeing is required to produce a good color. M. Hosh</p>																			
<p>25</p>																			
<p>Common Elements</p>																			
<p>Materials Index</p>																			
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<p><b>Cold dyeing of knitted goods.</b> S. A. Melikhov. <i>Let- taya Prom. S.</i> No. 9/10, 14-15, No. 11/12, 20 (1953).--In dyeing cotton fiber, the action of heat is to soften the wavy substances, and partly to remove pectin substances, etc., and thereby facilitate the penetration of the dye. Wetting agents facilitate the dye penetration without heating. Details are given of 6 methods for cold dyeing of knitted goods. Most effective wetting agents at 20-30° are sulfamide, Nektal BN and Kontakt. Other wetting agents are (1) soap, (2) a mixt. of sulfonated sperm whale fat 25, Leukanol 25, 20% soap 5 and H<sub>2</sub>O 45%, (3) a compu. prepd. by adding to a mixt. of kerosene 300, tur- pentine 200 and alizarin oil 150 cc., 100 cc. of 25% NH<sub>4</sub>- OH, then alizarin oil 300 cc. to make a homogeneous emulsion and finally turpentine 50 cc., and dilg. 1:2 with H<sub>2</sub>O. As further wetting agents for cold dyeing, good results were obtained with solns. of Na tetra- or metadi- silicate, and with an emulsion contg. rosin 30, NH<sub>4</sub> 2 and H<sub>2</sub>O 68%, prepd. by adding to powd. rosin with vigorous stirring 1/2 the quantity of NH<sub>4</sub> and H<sub>2</sub>O, heating to 50° maintaining this temp. for approx. 3 hrs., adding the rest of NH<sub>4</sub> and of H<sub>2</sub>O, and heating to 70° for 30 min. Either of these wetting agents is used in quantities of 10 g. per l. of bath. M. Hosh</p>																																																																																																																																																																								
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1ST AND 2ND DEGREES										100 AND 8TH DEGREES									
PROCESSES AND PROPERTIES INDEX																			
<p>Wetting agents in the textile industry. S. A. Melikhov and M. A. Tutunov. <i>Izvestiya Priroda</i>, 4, No. 3, 240 (1944). --Wetting agents examd. were (1) Kontakt, (2) Nekal BN, (3) Sulfoamble (a sulfonated amide of ricinoleic acid), (4) alizarin oil, (5) alizarin-kerosene emulsion, (6) Kontakt-kerosene emulsion and (7) alizarin-Kontakt-kerosene emulsion. Wetting power was detd. by (a) measuring the height of rise in a cotton fabric of a colored aq. soln. to which was added 0.5, 1.0 and 2.0 g./l. of wetting agent, (b) the time in min. it took a cotton fabric 3 x 3 cm. to submerge in 1, 5 and 10 g./l. soln. of the wetting agent at 20 and 50°, (c) the gain in wt. of a 100-in strip of a raw cotton fabric submerged for 1 min. in an aq 0.5, 1.0 and 2 g./l. soln. of the wetting agent at 20 and 50°, and allowed to drain for 3 min. The wetting powers of the substances tested are in decreasing order: (3), (2), (1), (5), (7), (4) and (6). The simplest, most rapid and most reliable method for detg. the wetting power is the submersion method, next the method of increase in wt. Most effective wetting agents for bucked and bleached cotton fabrics were (3), (2) and (1) in this order. The effects of these wetting agents on the depth, tone, purity and evenness of color were tested with 16 direct, 2 acid, 2 sulfur and 2 vat dyes. With direct dyes the effectiveness of the wetting agents in decreasing order is (3), (1), (2), (5), (4). For S and acid dyes (3) gave best results. With vat dyes (3) gives no improvement. M. Hosh</p>																			
<p>ASB-51A METALLURGICAL LITERATURE CLASSIFICATION</p>																			
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<p>GROUPS 1-10</p>										<p>GROUPS 11-20</p>									

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The dyeing of knitted cotton and viscose fabrics at low temperature. N. A. Melikhov, *Lezhnye Prom. 7*, No. 2, 33-5 (1947); cf. T.A. 28-4460; 40, 2110. - Optimum conditions for the dyeing of cotton goods with direct and sulfur colors at low temps. are summarized. For each of 19 dyestuffs, the following are quoted: (1) coeff. of dyestuff consumption - the ratio of amt. of dyestuff with the new method to amt. of dyestuff with the usual method for the same color intensity. (2) concn. of wetting agent in g./l., (3) concn. of dyestuff in g./l., (4) contact time in hrs., (5) temp. of cold water, (6) cooking salt in %, (7) recommended combinations with other dyestuffs in the table, and (8) amt. of Na<sub>2</sub>S in sulfur coloring in %. A typical example of the direct colors is that of direct green with a coeff. of 10, 5 g./l. of Kontakt, 0.5 g./l. of dyestuff, 1-2 hrs. contact time at 15-20° with 20% cooking salt. An example of the sulfur colors is Sulfur Black paste with a coeff. of 3.3, 6 g./l. soap plus 5 g./l. Kontakt or Nekal as wetting agents, 5-10% of the paste, 0.5 to 1.5 hrs. contact time at 15-20° with 20% cooking salt, and 15-20% Na<sub>2</sub>S. Marshall Sitts

ASTM-51A METALLURGICAL LITERATURE CLASSIFICATION

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